INVESTIGATOR'S ANNUAL REPORT

National Park Service

All or some of the information provided may be available to the public

Reporting Year: 1999	**Park:** Shenandoah NP
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Additional investigators or key field assistants (first name, last name, office phone, office email): No co-investigators	
Permit#: SHEN1999N-209	
Park-assigned Study Id. #: unknown	
Project Title: Dendroecological Study Of Adelgid Infestation Of Hemlock (N-209)	
Permit Start Date: Jan 01, 1998	**Permit Expiration Date** Jan 01, 2000
Study Start Date: Jan 01, 1996	**Study End Date** Jan 01, 2000
Study Status: Completed	
Activity Type: Research	
Subject/Discipline: Land Use / Forestry	
Objectives: Determine the impact of the woolly hemlock adelgid on the hemlock stands via tree ring analysis. Analysis will include a determination to see if pre-existing growth conditions may have left the hemlock more susceptible to attack. The decline process of the infected hemlock will also be studied.;Additionally, a forest growth model called JABOWA was modified to incorporate the impact of the hemlock woolly adelgid on a hemlock stand. The model was exercised using SNP site & climate conditions to "grow" a site similar to a hemlock stand in the SNP. Then the insect function was turned on and site succession projected 300 years in the future was observed after the hemlock were killed by the HWA.	
Findings and Status: I'm presently completing the final draft of my dissertation. I anticipate forwarding a copy to the SNP in July 2000. SNP staff are welcome to attend my defense at George Mason University in mid June 2000. ;A brief summary of findings to date are:;1)My generated response function showed hemlock growth was strongly (positively) correlated with prior growth,(positively)correlated with March precipitation and negatively correlated with Oct precip of the previous year. No sig correlation between growth and mean monthly temps.;2)The decline in stand growth after the onset of the HWA could not be statistically justified based upon climate alone.;3)Pre-disposing conditions were not present prior to the arrival of the HWA. Growth prior to the HWA was at near max levels for 10 yrs just before arrival. ;4)Given chance to reseed -hemlock will become dominant on site again in about 250 years!;5)Faster growing trees survived HWA longer.	
For this study, were one or more specimens collected and removed from the park but not destroyed during analyses? No	
Funding provided this reporting year by NPS: 0	**Funding provided this reporting year by other sources:** 0
Fill out the following ONLY IF the National Park Service supported this project in this reporting year by providing money to a university or college	
Full name of college or university:	**Annual funding provided by NPS to university or college this reporting**

n/a	**year:** 0